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Drehtainer GmbH

Building

The invention relates to a shelter or a building consisting of at least one building part in form of a freight container comprising side walls, a ceiling and a floor.

In areas, where there is a risk of detonations, buildings protected or armoured against pressure waves are required. These have not proved themselves ultimately, and that not even then, if they are formed with wall, floor and ceiling panelling, which deforms under pressure exposure and therefor absorbs a large part of the pressure wave energy. That is, it cannot be avoided thereby that a strong pressure wave develops and propagates, the forces of which attack in the floor area of the building and can exert such a blow to the feet of a person situated there that the person can be seriously injured. This also happens, when the detonation occurs at the side of the building.

The invention intends to remedy this and provides a building, the components of which effectively protect a person situated inside, which is achieved in that on the interior a floor panel loosely lies on the floor, which is several cm smaller than the interior.

In the present invention an effect of inertia is utilised: if a detonation occurs, the corresponding pressure wave can reach the housing and mechanically load the housing

correspondingly, but the floor panel remains stationary in place due to its inertia and does not exert any mechanical loads or blows on a person situated there, disregarding the fact, whether the person stands or sits on a chair there. The thickness of the panel ranges according to the invention from several cm or more, wherein the larger thickness also entails a correspondingly higher inertia. The floor panel is distanced on all sides in the range of centimetres to the side boundaries of the building, that is to the walls, and freely movable rests on suitable supports.

In a preferred embodiment of the invention, the floor panel is formed with fasteners for the transport. These can be apertures, which are aligned with bores in the lower part of the container such that simple bolt or screw connections can be formed. These connections are to be effective only during transport and ensure that the relatively heavy floor panel cannot move even in case of strong accelerations of the vehicle during transport.

A further preferred embodiment is characterised in that in addition to the floor panel in the clearance between an inner wall and a surrounding outer wall arranged in spaced relationship thereto profiled parts telescoping with each other in pairs are arranged spaced from each other, the end pieces of which are each attached at the top and bottom. It can be achieved by this formation of the building walls that a pressure wave coming from the outside only damages the walls, but loses such a lot of energy thereby that the

pressure wave practically cannot exert any effect onto the interior and especially the floor panel any more.

It is within the scope of the present invention, to design the profiled parts with a special length and to produce them from steel sections preferably in the shape of square sections.

Finally, a still larger energy amount can also be absorbed by surfaces increasing friction in the telescoping profiled parts, which is taken from the propagating pressure wave and results in an enlarged protection of the persons located inside of the building.

The invention is illustrated below with reference to the drawings.

Figure 1 shows a top view onto the interior of a building according to the invention.

Figure 2 shows a front view of figure 1.

Figure 3 shows a vertical sectional view of a part of the wall construction of a building according to the invention in undamaged condition.

Figure 4 shows the corresponding conditions after a detonation.

Figure 5 shows a view according to A-A of figure 3, however scaled down 2:1.

The shown embodiment of a building according to the invention consists substantially of a freight container formed with four side walls, wherein only one side wall is indicated by the reference number 1 in figure 1. Inside and spaced from the inner walls, a floor panel 3 in one piece has been loosely laid onto the floor of the container. One of four bores has been indicated by 2, which passes through the floor panel 3 and enables that a bolt can be inserted through it and screwed into the floor 4 for the transport.

Not shown in the figures is a net or a sheet or a supporting film, which covers and bridges the clearances between the outer boundary of the floor panel and the adjacent inner walls.

It is within the scope of the present invention, to arrange several such containers next to each other and connect them. In any case an anti-shock effect is achieved by the floor panel 3 for each individual shelter of such a building, because the floor of the building can move with regard to the floor panel, but the panel does not change its position due to its inertia.

In the figures 3 and 4, a part of the shelter of a building according to the invention is shown, which is circumscribed by two walls surrounding each other, that is an inner wall 10 and an outer wall 11.

According to the invention, this clearance between inner walls 10 and outer walls 11 is designed in a special manner, wherein Figure 3 shows an embodiment, wherein a

supporting profiled part projects substantially vertically downwards. This tubular profiled part 20 is welded on there and receives in its interior a rod shaped matching part 21 of hollow section, which projects upwards in corresponding vertical alignment from the floor. The two profiled parts 20 and 21 can perform telescoping movements with each other, if an explosion, for example, produces a pressure wave, which acts from the side towards the shelter (figure 4). The conditions arising in this situation illustrate that the inner and the outer walls 10 and 11 can be deformed and that the profiled parts 20 and 21 in this counteract this deformation.

The profiled parts 20 and 21 can be arranged in a suitable side distance from each other, as this can be seen in fig. 5. These distances depend on the size of the shelter, but also on the cross-sectional dimensions of the profiled parts 20 and 21.

It is not substantial for the invention, whether the receiving telescoping part is attached at the ceiling or at the floor, important is that these parts can perform the desired telescoping movement with regard to each other, wherein this movement can be attenuated by means increasing friction at the surfaces.

A substantial factor in the invention is also that the upper profiled part is attached to the ceiling, and that in an area, in which the ceiling can deform downwards in case of a pressure wave. Also in this respect deformation energy

is concerned, which must be used up and takes a substantial part off the energy present in the pressure wave.

As a material for the profiled parts metal and especially steel is suitable, square section parts can be inserted, which telescope with each other, wherein the square section can have a cross-sectional dimension in the range of 3 x 5 cm.

Furthermore, a net 30 can be provided (figs. 3 and 4), which is arranged in a certain distance to the inner wall and substantially vertical, in order to avoid that the parts of the wall detached in case of an explosion wave can move into the interior of the building.